

SAU 2852

PATENT

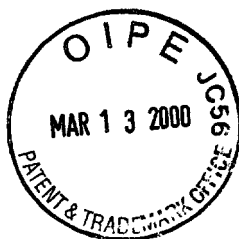
I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO: ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231 ON THE DATE INDICATED BELOW.

BY: Myra E. Pettigrew DATE: March 7, 2000
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Patent Application of
Katsuyuki Ito

: Group Art Unit: 2852

Appln. No.: 09/241,131



: Examiner: Smith, M.

Filed: February 1, 1999

: Attorney Docket
: No. 209448.0069/69US
:(G0131US)

For: COLOR IMAGE RECORDING
APPARATUS

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AMENDMENT

This Amendment is being timely filed in response to the Office Action mailed December 9, 1999 (Paper No. 4).

Please amend the above-captioned application, without prejudice, as follows:

In the Title:

Please delete the original title in its entirety, and substitute therefor: --CONTROL OF PRINTING SPEED AND FUSER TEMPERATURE BASED UPON MONOCHROMATIC OR FULL-COLOR ~~COPYING~~ ^{PRINTING}--.

In the Specification:

Page 7, line 31, delete "no" and substitute therefor --not--.

In the claims:

[Please amend claim 1, as follows:]

1. (Amended) A color image forming apparatus [capable of color printing and monochrome printing in accordance with print data, the apparatus having a plurality of image-forming sections that print toner images of corresponding different colors, the plurality of image-forming sections being aligned in a direction of travel of a recording medium and printing the toner images in superposition on the recording medium, the toner images are subsequently fixed at a fixing unit] having an image forming section wherein an image is formed on a rotating photoconductive body in accordance with print data to print the image on a recording medium

selectively in a multi-color mode and in a mono-color mode, the apparatus comprising:

a data-identifying section, identifying the print data as to whether the print data is for color printing or for [monochrome] mono-color printing; and

a mode-selecting section, selecting a multi-color mode if the print data is for color printing and a mono-color mode if the print data is for [monochrome] mono-color printing [a printing operation is performed at a higher speed in the mono-color mode than in the multicolor mode] wherein the photoconductive body rotates at a greater speed when one page of image is printed in the mono-color mode than when one page of image of a corresponding color is printed in the multi-color mode;

a recording medium is transported at the greater speed when one page of image is printed in the mono-color mode than when one page of image of a corresponding color is printed in the multi-color mode; and

a fixing operation is performed at the greater speed in the mono-color mode than in the multi-color mode.

Please add new claims 5 through 8 as follows:

5. The color image forming apparatus according to claim 1, wherein the image forming section is one of a plurality of image forming sections aligned substantially in a direction of travel of a recording medium so that toner images of different colors are printed in superposition on the recording medium as the recording medium passes through the plurality of image forming sections.

6. The color image forming apparatus according to claim 5, wherein said mode-selecting section sets ^athe fixing unit for a higher fixing temperature in the mono-color mode than in the multi-color mode.

7. The color image forming apparatus according to claim 6, wherein a first type of toner is used in the mono-color mode and a second type of toner is used in the multi-color mode, the first type of toner having a lower melting point than the second type of toner.

8. The color image forming apparatus according to claim 7, wherein the first type of toner is black toner.

REMARKS

After the foregoing Amendment, claims 1-8 are pending in the present application. Claim 1 has been amended to more particularly point out and distinctly claim the subject matter which applicant regards as the invention. A typographical error in the specification has been corrected and a new title clearly indicative of the invention has been submitted in place of the title objected to by the Examiner. Applicant submits that no new matter has been added to the application by the Amendment.

THE PRESENT INVENTION

The present invention provides an image recording apparatus (1) having an image forming section (2) wherein an image is formed on a rotating photo-conductive body (6) in accordance with print data to print the image on a recording medium (27) selectively in a multi-color mode and in a mono-color mode. A data-identifying section (41) identifies the print data for determining whether the print data is for color printing or for mono-color printing and a mode-selecting section, selects between a multi-color mode if the print data is for color printing or a mono-color mode if the print data is for mono-color printing. The photoconductive body is rotated at a greater speed when one page of image is printed in the mono-color mode than when one page of image of a corresponding color is printed in the multi-color mode.

In this way, a recording medium is transported at a greater speed when one page of image is printed in the mono-color mode than when one page of image of a corresponding color is printed in the multi-color mode and a fixing operation is performed at the greater speed in the mono-color mode than in the multi-color mode.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-2 under 35 U.S. C. § 103 as being unpatentable over Japanese Patent JP 07-219385 (Nami et al.) in view of U.S. Patent No. 5,517,293 (Tonai et al.) and U.S. Patent No. 4,549,830 (Ohno et al.). The Examiner contends that Nami et al. and Ohno et al. teach changing a fuser temperature of a fixing roller in response to a detected image type. Further, the Examiner takes official notice that mono-color images can be printed faster than a full color image. Applicant respectfully traverses this rejection.

Claim 1 recites, *inter alia*, a color image forming apparatus which includes "a mode-selecting section, selecting a multi-color mode if the print data is for color printing and a mono-color mode if the print data is for mono-color printing wherein the photoconductive body rotates at a greater speed when one page of image is printed in the mono-color mode than when one page of image of a corresponding color is printed in the multi-color mode..." (emphasis added).

It is well settled that when making a rejection under 35 U.S.C. § 103, the Examiner has the burden of establishing a *prima facie* case of obviousness. To establish *prima facie* obviousness of a claimed invention under 35 U.S.C. § 103, all the claimed limitations must be taught or suggested by the prior art.

Nami et al. disclose a printer which includes a single image-forming section wherein multicolor images (black, yellow, magenta and cyan) are formed, developed, and transferred in sequence onto a recording medium. The temperature of the fixing unit is adjusted depending upon the type of image being formed (i.e. mono-color or multi-color).

As discussed in paragraph 0029 of the Nami et al., the number of image formations per unit of time is 5 copies per minute (cpm) in the full color mode and 20 cpm in the mono-color mode. Thus, printing an image of any one of black, magenta, yellow and cyan requires an identical length of time. Therefore, the total time required for forming an image of a page is directly proportional to the number of colors in that image (See paragraphs 0015-0016). As can be appreciated from the specification of Nami et al, the speed of travel of the recording medium when an image is printed in the mono-color printing mode, must then be the same as that when an image of each color is printed in the color printing mode. Thus, in contrast to the present invention Nami et al. teach detecting the type of image data received, and changing only

the fixing temperature in response to the image data type (i.e., mono-color or multi-color). In the event color image data is detected, the fixing unit is set to a relatively high temperature, for mono-color image data the fixing temperature is set to a relatively low temperature.

As recited in Applicant's amended claim 1, Nami et al. do not teach or suggest changing the speed that the recording medium is transported through the apparatus and the rotational speed of the photo-conductive body in response to a detected mono-color printing mode or multi-color mode. Nami et al simply discloses that it takes less time to print an image of a single color than one of multi-color.

Tonai et al. disclose an electrophotographic printer which determines whether received print data is either multi-color print data or mono-color print data. The fixing temperature of the electrophotographic printer is set based on the determination of multi-color print data or mono-color print data.

As outlined above, Tonai et al. do not disclose controlling the speed at which electrophotographic mechanisms form a corresponding image on a recording medium and the speed at which the recording medium is transported through the apparatus according to a print mode (i.e., mono-color print mode or multi-color print mode).

Accordingly, Applicant submits that Nami et al. alone or in combination with Tonai et al. do not teach or suggest Applicant's invention as recited in claim 1.

Ohno et al. teach an electrophotographic printing apparatus having a single image-forming section where images of up to four colors (black, yellow, magenta and cyan) are developed and transferred to a print medium in sequence. Both the fixing temperature and the fixing speed are controlled by a control system which includes selector means (51) for changing the temperature T of the fixing roller and the speed V of the fixing roller.

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Specifically, Ohno et al. teach controlling the amount of energy (heat) supplied to the recording medium and toner according to the type of recording medium (OHP or ordinary paper).

In contrast to the cited reference, the present invention changes the rotational speed of a photo-conductive body and the speed at which a recording medium is transported through the apparatus according to a printing mode (i.e., the mono-color mode or the multi-color mode). Thus Applicant submits that Ohno et al. does not teach or suggest Applicant's claim 1 alone or in combination with Tonai et al.

Accordingly, Applicant respectfully requests that the rejection of claims 1-2 under 35 U.S.C. § 103 be withdrawn.

Moreover, new claims 5-8 are allowable at least by their dependency on claim 1.

In view of the foregoing Amendment and remarks, it is respectfully submitted that the present application, including claims 1 through 8, as amended, is condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,

KATSUYUKI ITO

3-7-00

(Date)

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